

CLAIMS

What is claimed is:

1. An appliance for administering a reduced pressure treatment to a wound, comprising:
 - 5 (a) an impermeable cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound;
 - (b) a seal adapted to seal the cover to tissue surrounding the wound;
 - (c) reduced pressure supply means for connection to a source of suction, the reduced pressure supply means cooperating with the cover to supply the reduced pressure beneath the
 - 10 cover; and
 - (d) an absorbable matrix adapted to encourage growth of the tissue in the area of the wound into the matrix, said absorbable matrix being located between the wound and the cover.
2. The appliance of Claim 1, wherein the absorbable matrix is comprised of more than one type
- 15 of absorbent material, said materials having different rates of absorption.
3. The appliance of Claim 1, wherein the seal is comprised of an adhesive material on the cover adapted to secure the wound cover to the tissue surrounding the wound.
- 20 4. The appliance of Claim 1, wherein the cover is comprised of a temperature-sensitive material to provide for monitoring the temperature at the site of the wound.
5. An appliance for administering a reduced pressure treatment to a wound, comprising:
 - (a) an impermeable cover adapted to cover and enclose the wound and adapted to maintain
 - 25 reduced pressure at the site of the wound;

(b) a seal adapted to seal the cover to tissue surrounding the wound; and

(c) reduced pressure supply means for connection to a source of suction, said reduced pressure supply means cooperating with the cover to supply the reduced pressure beneath the cover, wherein the reduced pressure supply means comprises an absorbable matrix and the reduced pressure supply means includes a segment of tubing embedded within the absorbable matrix.

6. An appliance for monitoring pressure during treatment of any body part of a patient, comprising:

(a) an impermeable cover adapted to cover and enclose the body part being treated and adapted to maintain reduced pressure at the site of the body part being treated, wherein the cover includes pressure monitoring means to monitor the pressure at the site of the body part being treated; and

(b) a seal adapted to seal the cover to tissue surrounding the body part being treated.

7. The appliance of Claim 6, wherein the seal is comprised of an adhesive material on the cover adapted to secure the cover to the tissue surrounding the body part being treated.

8. The appliance of Claim 6, wherein the pressure monitoring means is comprised of a plurality of protrusions within the cover, such that the amount of displacement of the protrusions above the remaining surface of the cover decreases as the pressure in the volume beneath the wound cover increases.

9. The appliance of Claim 6, wherein the pressure monitoring means is comprised of a plurality of protrusions within the cover, such that the protrusions are displaced in an increasing amount

away from the remaining surface of the cover as the pressure in the volume beneath the wound cover increases.

10. The appliance of Claim 9, wherein the protrusions are in the shape of “hills” or “bumps.”

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11. The appliance of Claim 9, wherein the protrusions are in the shape of a bellows.

12. The appliance of Claim 9, wherein the protrusions have a color different from the color of the remaining surface of the cover, or a different shade of the same color as the shade of the

10 color on the remaining surface of the cover, as the protrusions are displaced away from the remaining surface of the cover.

13. The appliance of Claim 9, further comprising sound means, wherein the sound means produce an audible sound as the protrusions are displaced away from the remaining surface of
15 the cover.

14. An appliance for administering a reduced pressure treatment to a wound, comprising:

- (a) an impermeable cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound, wherein the cover includes pressure monitoring
20 means to monitor the pressure at the site of the wound;
- (b) a seal adapted to seal the cover to tissue surrounding the wound; and
- (c) reduced pressure supply means for connection to a source of suction, said reduced pressure supply means cooperating with the cover to supply the reduced pressure beneath the cover.

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15. The appliance of Claim 14, wherein the seal is comprised of an adhesive material on the cover adapted to secure the cover to the tissue surrounding the wound.

16. The appliance of Claim 14, further comprising a packing material adapted to prevent
5 overgrowth of wound tissue, the packing material being located between the wound and the cover.

17. The appliance of Claim 14, further comprising an absorbable matrix adapted to encourage
growth of tissue in the area of the wound into the matrix, the matrix being located between the
10 wound and the cover.

18. The appliance of Claim 14, wherein the pressure monitoring means is comprised of a
plurality of protrusions within the cover, such that the amount of displacement of the protrusions
above the remaining surface of the cover decreases as the pressure in the volume beneath the
15 cover increases.

19. The appliance of Claim 14, wherein the pressure monitoring means is comprised of a
plurality of protrusions within the cover, such that the protrusions are displaced in an increasing
amount away from the remaining surface of the cover as the pressure in the volume beneath the
20 cover increases.

20. The appliance of Claim 19, wherein the protrusions are in the shape of “hills” or “bumps.”

21. The appliance of Claim 19, wherein the protrusions are in the shape of a bellows.
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22. The appliance of Claim 19, wherein the protrusions have a color different from the color of the remaining surface of the cover, or a different shade of the same color as the shade of the color on the remaining surface of the cover, as the protrusions are displaced away from the remaining surface of the cover.

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23. The appliance of Claim 19, further comprising sound means, wherein the sound means produce an audible sound as the protrusions are displaced away from the remaining surface of the cover.

10 24. An appliance for administering a reduced pressure treatment to a wound, comprising:

(a) an impermeable cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound;

(b) a seal adapted to seal the cover to tissue surrounding the wound;

15 (c) reduced pressure supply means for connection to a source of suction, said reduced pressure supply means cooperating with the cover to supply the reduced pressure beneath the cover; and

(d) temperature measuring means to monitor the temperature of tissue at and surrounding the wound.

20 25. The appliance of Claim 24, wherein the seal is comprised of an adhesive material on the cover adapted to secure the cover to the tissue surrounding the wound.

26. The appliance of Claim 24, wherein the temperature measuring means is comprised of one or more layers of temperature-sensitive material being located between the cover and the wound.

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27. The appliance of Claim 26, wherein one layer of temperature sensitive material is located between the cover and the wound, such layer being comprised of a material sensitive to changing temperature so that the material changes from one color to another color (or from one shade to another shade of the same color) as the temperature of such material changes.

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28. The appliance of Claim 27, wherein the temperature-sensitive material is attached to a surface of the cover so that the cover and the temperature-sensitive material comprise a single integrated unit.

10 29. The appliance of Claim 24, wherein the temperature measuring means is comprised of one or more temperature measuring devices located above the cover or in any portion of the volume between the cover and the site of the wound, or the temperature measuring device or devices being embedded in the cover.

15 30. The appliance of Claim 29, further comprising an alarm system comprising:
(a) a data processor operably attached to the temperature measuring device or devices; and
(b) an alarm device that is operably connected to the data processor, wherein the alarm device provides an alarm signal when the temperature measured by any temperature sensing device exceeds or is lower than a predetermined value.

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31. The appliance of Claim 29, further comprising a temperature display and recording device that is operably connected to the data processor.

32. An apparatus for treating a wound comprising:

25 (a) a vacuum system adapted to produce a reduced pressure;

(b) a collection system that is operably connected to the vacuum system, wherein the collection system is comprised of a container that collects fluid aspirated from the wound and means for halting the application of reduced pressure to the wound when the fluid exceeds a predetermined quantity; and

5 (c) a reduced pressure appliance operably connected with the collection system adapted to apply the reduced pressure to the wound, the appliance comprising:

(i) an impermeable cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound;

(ii) a seal adapted to seal the cover to tissue surrounding the wound;

10 (iii) reduced pressure supply means for connection with the vacuum system adapted to supply the reduced pressure within the cover to the wound; and

(iv) an absorbable matrix to prevent overgrowth of wound tissue, the absorbable matrix being located between the wound and the cover.

15 33. The apparatus of claim 32, wherein the reduced pressure is from about 2 in. Hg below atmospheric pressure to about 7 in. Hg below atmospheric pressure.

34. The apparatus of claim 32, wherein the reduced pressure supply means comprises a length of tubing, and the halting means comprises a flotation valve within the container for blocking the
20 tubing when a predetermined amount of fluid is collected within the container.

35. An apparatus for treating a wound comprising:

(a) a vacuum system adapted to produce a reduced pressure;

(b) a collection system that is operably connected to the vacuum system, wherein the
25 collection system is comprised of a container that collects fluid aspirated from the wound

and means for halting the application of reduced pressure to the wound when the fluid exceeds a predetermined quantity; and

(c) a reduced pressure appliance operably connected with the vacuum system adapted to apply the reduced pressure to the wound, the appliance comprising:

- 5 (i) an impermeable cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound, wherein the cover includes pressure monitoring means to monitor the pressure at the site of the wound;
- (ii) a seal adapted to seal the cover to tissue surrounding the wound; and
- (iii) reduced pressure supply means for connection with the vacuum system adapted to
- 10 supply the reduced pressure within the cover to the wound.

36. The apparatus of claim 35, wherein the reduced pressure is from about 2 in. Hg below atmospheric pressure to about 7 in. Hg below atmospheric pressure.

- 15 37. The apparatus of claim 35, wherein the reduced pressure supply means comprises a length of tubing, and the halting means comprises a flotation valve within the container for blocking the tubing when a predetermined amount of fluid is collected within the container.

38. An apparatus for treating a wound comprising:

- 20 (a) a vacuum system adapted to produce a reduced pressure;
- (b) a collection system that is operably connected to the vacuum system, wherein the collection system is comprised of a container that collects fluid aspirated from the wound and means for halting the application of reduced pressure to the wound when the fluid exceeds a predetermined quantity; and
- 25 (c) a reduced pressure appliance operably connected with the vacuum system adapted to

apply the reduced pressure to the wound, the appliance comprising:

- (i) an impermeable cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound;
- (ii) a seal adapted to seal the cover to tissue surrounding the wound;
- 5 (iii) reduced pressure supply means for connection with the vacuum system adapted to supply the reduced pressure within the cover to the wound; and
- (iv) temperature measuring means to monitor the temperature of tissue at and surrounding the site of the wound.

10 39. The apparatus of claim 38, wherein the reduced pressure is from about 2 in. Hg below atmospheric pressure to about 7 in. Hg below atmospheric pressure.

40. The apparatus of claim 38, wherein the reduced pressure supply means comprises a length of tubing, and the halting means comprises a flotation valve within the container for blocking the
15 tubing when a predetermined amount of fluid is collected within the container.

41. A portable apparatus for treating a wound, comprising:

(a) a reduced pressure wound treatment appliance, comprising:

- (i) an impermeable cover adapted to cover and enclose the wound and adapted to
20 maintain reduced pressure at the site of the wound; and
- (ii) a seal adapted to seal the cover to tissue surrounding the wound; and

(b) a compact vacuum source adapted to be attached to the surface of the cover and adapted to produce reduced pressure;

(c) a portable collection system, comprising:

25 (i) a container adapted to maintain reduced pressure within its volume and adapted to

collect fluid aspirated from the wound; and

(ii) shutoff means for halting application of reduced pressure to the wound when the fluid exceeds a predetermined quantity; and

(d) vacuum source means to operably connect the vacuum source to the portable collection
5 system; and

(e) reduced pressure means to operably connect the portable collection system to the reduced pressure appliance.

42. The apparatus of Claim 41, further comprising a filter, wherein the filter is operably
10 connected to the vacuum source and the collection system within the vacuum source means.

43. The apparatus of Claim 42, wherein the vacuum source means is a rigid attachment so that the vacuum source, the filter, and the collection system form a single integrated unit.

15 44. The apparatus of Claim 41, wherein the vacuum source means is a rigid attachment so that the vacuum source and the collection system form a single integrated unit.

45. The appliance of Claim 41, wherein the seal is comprised of an adhesive material on the cover adapted to secure the cover to the tissue surrounding the wound.

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46. The appliance of Claim 41, further comprising a packing material adapted to prevent overgrowth of wound tissue, the packing material being located between the wound and the cover.

25 47. The appliance of Claim 41, further comprising an absorbable matrix adapted to encourage

growth of tissue in the area of the wound into the matrix, the matrix being located between the wound and the cover.

48. A method of treating a wound, comprising the steps of:

5 (a) applying a reduced pressure to the wound, wherein said applying step comprises the steps of:

(i) placing an absorbable matrix into the wound;

(ii) locating an impermeable cover over the wound, wherein the cover has a suction port;

(iii) sealing the periphery of the cover to tissue surrounding the wound; and

10 (iv) operably connecting the suction port with a vacuum system for producing the reduced pressure; and

(b) maintaining the reduced pressure until the wound has progressed toward a selected stage of healing.

15 49. The method of claim 48, wherein the reduced pressure is from about 2 in. Hg below atmospheric pressure to about 7 in. Hg below atmospheric pressure.

50. The method of Claim 48, further comprising:

20 (a) the step of placing temperature monitoring means in the area surrounding the wound as an applying step; and

(b) the step of monitoring the temperature at the site of the wound.

51. The method of Claim 48, wherein the cover includes pressure monitoring means to monitor the pressure at the site of the wound, and further comprising the step of monitoring the pressure
25 at the site of the wound by visually observing the pressure monitoring means.

52. The method of Claim 49, wherein the reduced pressure is applied in a cyclic nature, said cyclic nature providing alternating time periods of application of reduced pressure and without application of reduced pressure.

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